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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,965	11/21/2001	Xiang Liu	4-4-8	3316

7590 12/13/2004

Docket Administrator (Room 3J-219)
Lucent Technologies Inc.
101 Crawfords Corner Road
Holmdel, NJ 07733-3030

EXAMINER	
LEE, DAVID J	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,965	LIU ET AL.	
	Examiner	Art Unit	
	David Lee	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/24/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 4-5 and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al (US Patent No. 6,459,518).

Regarding claims 4 and 12, Suzuki teaches a transmitter for use in an optical communication system (fig. 5), said transmitter comprising means for generating first and second streams of RZ optical pulses (fig. 5, 61-1 and 61-2) in which pulses is said first stream have essentially orthogonal polarizations with respect to pulses in said second stream (fig. 5, 64-1 and 64-2, and col. 7, lines 33-36, and col. 2, lines 49-51: the phase modulator performs both phase modulation and polarization modulation, and it sets the two streams orthogonal to each other) , and means for modulating the phase of said optical pulses in said first and second streams as a function of first and second streams of input data applied to said transmitter, respectively (fig. 5, 64-1 and 64-2).

Regarding claims 5 and 13, Suzuki teaches that first and second streams of optical pulses each have the same first wavelength (fig. 5, since part of the same set, laser diode 60-1 and laser diode 60-2 are considered to operate at the same wavelength, where $\lambda 1=\lambda 2$), and wherein said transmitter further includes a wavelength division multiplexer for combining the output of said modulation means (fig. 5, 72, and

col. 7, lines 24-25) with at least a second modulated optical signal having a wavelength different from said first wavelength (fig. 5, laser diode λn is considered to operate at a different wavelength than λ1 and λ2 since it is part of a different set).

3. Claims 1-3, 7-11, and 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Price et al (US Patent No. 6,522,439).

Regarding claims 1, 7, 9, and 15, Price teaches a transmitter for use in an optical communication system (fig. 3, 12), said transmitter comprising means for generating a stream of RZ optical pulses (col. 2, line 7) in which alternate ones of such pulses have essentially orthogonal polarizations (col. 4, lines 59-61), and means for modulating the phase of said optical pulses as a function of input data applied to said transmitter (col. 3, lines 18-20, or col. 2, line 15: PSK is a type of phase modulation). Price also teaches an optical communication channel for transmitting the modulated optical pulses from said transmitter to said remote receiver (fig. 3, 14).

Regarding claims 8 and 16, Price teaches a demodulator (fig. 10, 48) for recovering said at least one stream of input data from said modulated optical pulses received at said remote receiver (fig. 3, 14).

Regarding claims 2 and 10, Price teaches that the modulating means is a phase shift keyed (PSK) modulator (col. 2, lines 14-16).

Regarding claims 3 and 11, Price teaches that the modulating means is arranged to modulate said optical pulses in accordance with the differences between successive bits in said input data. This is also known as differential phase shift key modulation

(DPSK), and Price discloses differential PSK in column 8, lines 50-57, while discussing different types of data modulation techniques.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki in view of Hasegawa (US Patent No. 4,406,516).

Regarding claims 6 and 14, Suzuki discloses all the limitations as applied to claims 4 and 12, but does not expressly disclose that the optical pulses are solitons. Hasegawa, from a similar field of endeavor, discloses a transmission system where the optical pulses are solitons (col. 3, line 56). It would have been obvious to one of ordinary skill in the art at the time of invention to use soliton pulses as indicated by Hasegawa in a long-haul transmission system such as Suzuki's because soliton pulses retain their shape even in the presence of higher order chromatic dispersion and of fiber loss (col. 3, lines 16-18). Therefore, one of ordinary skill in the art at the time of invention would have been motivated to use soliton pulses as indicated by Hasegawa in the system of Suzuki, in order to retain pulse shape, permitting high data, long-haul transmission systems.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Usami et al (US Patent No. 6,728,019) discloses an optical phase modulator with orthogonal polarization components.

Watanabe (US Patent No. 5,798,853) discloses an optical communication system with a phase conjugate light generator.

Ito (US Patent No. 6,650,846) discloses an optical transmitter with a phase modulator and a polarization modulator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lee

M. R. SEDIGHIAN
PRIMARY EXAMINER